

Solution

$$\begin{aligned}& \frac{\sqrt{28} + \sqrt{343}}{2\sqrt{63}} + \frac{5}{3} \\&= \frac{\sqrt{4 \times 7} + \sqrt{49 \times 7}}{2 \times \sqrt{9 \times 7}} + \frac{5}{3} \\&= \frac{\sqrt{4} \times \sqrt{7} + \sqrt{49} \times \sqrt{7}}{2 \times \sqrt{9} \times \sqrt{7}} + \frac{5}{3} \\&= \frac{2\sqrt{7} + 7\sqrt{7}}{6\sqrt{7}} + \frac{5}{3}\end{aligned}$$

Since the roots are the same we add the co-efficient of the root at the numerator

$$\begin{aligned}&= \frac{(2+7)\sqrt{7}}{6\sqrt{7}} + \frac{5}{3} \\&= \frac{9\sqrt{7}}{6\sqrt{7}} + \frac{5}{3} \\&= \frac{9\cancel{\sqrt{7}}}{6\cancel{\sqrt{7}}} + \frac{5}{3} \\&= \frac{9}{6} + \frac{5}{3}\end{aligned}$$

L.C.M is 6

$$\begin{aligned}&= \frac{9+10}{6} \\&= \frac{19}{6} \\&= 3\frac{1}{6}\end{aligned}$$